What is claimed is:

1. A position detecting device for detecting a pointed position of a position pointing device having a light emitting means or a shadow generating means, comprising:

a flat board having a position detecting area which defines a range where said position pointing device can be moved by an operator on said flat board; and

optical units disposed at least at two positions adjacent to said position detecting area of said flat board, and detecting said pointed position of said position pointing device by the principle of triangulation using light,

each of said optical units comprising:

a one-dimensional light receiving element array having a plurality of light receiving elements;

a sequential output circuit outputting sequentially an analog value of an output of said one-dimensional light receiving element array;

a clock circuit supplying a timing signal to said sequential output circuit;

an output level comparing circuit judging whether the output from said sequential output circuit is higher or lower than a predetermined voltage level, and converting said analog value into a digital timing signal; and

a variation timing measuring circuit for obtaining a variation timing of said output level comparing circuit,

said pointed position of said position pointing device being detected from the output of said variation timing measuring circuit of each of said optical units by obtaining an incident angle of light or shadow from said position pointing device to each of said optical units.

2. The position detecting device according to claim 1, in which said position pointing device has said light projecting means which projects the light directly or indirectly, said output level comparing circuit is provided so as to be sensitive to the incident light, and the output of said variation timing measuring circuit corresponds to said incident angle of the light.

3. The position detecting device according to claim 2, which further comprises a light source means provided adjacent to each of said optical units, and in which said position pointing device comprises a retroreflective means for retroreflecting the light from said light source means.

4. The position detecting device according to claim 1,

which further comprises a light projecting frame which projects the light directly or indirectly provided to a peripheral portion of said position detecting area of said flat board, in which said position pointing device has an intercepting function for intercepting the light from said light projecting frame, in which said output level comparing circuit is provided to be sensitive to the incident shadow generated by said position pointing device, and in which the output of said variation timing measuring circuit corresponds to said incident angle of the shadow.

5. The position detecting device according to claim 4, which further comprises a light source means provided adjacent to each of said optical units, and in which said light projecting frame is a retroreflective frame for retroreflecting the light from said light source means.

6. The position detecting device according to claim 1, in which said variation timing measuring circuit is provided to detect both a start timing and an end timing of the light or the shadow to be detected, so that the center of said light or said shadow is calculated from both the timings.

7. The position detecting device according to claim 1,

in which said variation timing measuring circuit repeatedly detects the light or the shadow to be detected, so that a plurality of the pointed positions are calculated.

8. The position detecting device according to claim 1, which further comprises a low-pass filter circuit provided between said sequential output circuit of said one-dimensional light receiving element array and said output level comparing circuit, and in which a measuring time resolution of said variation timing measuring circuit is set to be higher than a clock period of said clock circuit supplying said timing signal to said sequential output circuit.

9. A position detecting method in a position detecting device for detecting a pointed position of a position pointing device having a light emitting means or a shadow generating means, and having a flat board having a position detecting area which defines a range where said position pointing device can be moved by an operator on said flat board, and optical units disposed at least at two positions adjacent to said position detecting area of said flat board, and detecting said pointed position of said position pointing device by the principle of triangulation using light, said position detecting method comprising the

steps of:

a light receiving element output extracting step for sequentially taking an output of a one-dimensional light receiving element array having a plurality of light receiving elements provided in each of said optical units;

an output level comparing step for judging whether the output taken at said light receiving element output extracting step is higher or lower than a predetermined voltage level, and converting said output into a digital timing signal; and

a variation timing measuring step for obtaining an output variation timing from said digital timing signal obtained at said output level comparing step,

said pointed position of said position pointing device being detected from the output at said variation timing measuring step through each of said optical units by obtaining an incident angle of light or shadow from said position pointing device to each of said optical units.

10. The position detecting method according to claim 9, in which said position pointing device projects the light directly or indirectly, said output level comparing step is set to be sensitive to the incident light, and the output at said variation timing measuring step corresponds to said incident angle of the light.

11. The position detecting method according to claim 10, which further comprises a light source means provided adjacent to each of said optical units, and in which said position pointing device comprises a retroreflective means for retroreflecting the light from said light source means.

12. The position detecting method according to claim 9, which further comprises a light projecting frame which projects the light directly or indirectly provided to a peripheral portion of said position detecting area of said flat board, in which said position pointing device intercepts the light from said light projecting frame, in which said output level comparing step is set to be sensitive to the incident shadow generated by said position pointing device, and in which the output at said variation timing measuring step corresponds to said incident angle of the shadow.

13. The position detecting method according to claim 12, which further comprises a light source means provided adjacent to each of said optical units, and in which said light projecting frame is a retroreflective frame for retroreflecting the light from said light source means.

14. The position detecting method according to claim 9, in which said variation timing measuring step detects both a start timing and an end timing of the light or the shadow to be detected, so that the center of said light or said shadow is calculated from both the timings.

15. The position detecting method according to claim 9, in which said variation timing measuring step repeatedly detects the light or the shadow to be detected, so that a plurality of the pointed positions are calculated.

16. The position detecting method according to claim 9, which further comprises a low-pass filtering step provided between said light receiving element output extracting step and said output level comparing step, and in which a measuring time resolution at said variation timing measuring step is set to be higher than a clock period of a clock circuit supplying a timing signal at said variation timing measuring step.